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CLIMATOLOGY OF CONSUMPTION.—No. II.

BY AUGUSTUS A. GOULD, M.D.

[Read before the Boston Society for Medical Improvement, and communicated for the Boston Medical and Surgical Journal.]

IN the number of the Boston Medical and Surgical Journal for Sept. 10, 1863, I gave a table, derived from the United States Census of 1860, showing the comparative proportion of deaths from consumption and from fevers in each of the States, with some speculations as to the proximate causes of those diseases, and the differences in their distribution. It was shown that the mortality for consumption regularly decreases from North to South, and is only about one tenth part as frequent a cause of death in Georgia as in Maine; and again, that with the great class of fevers the reverse is the case, so that if the deaths from the two causes were added together for each of the States, their sums would be nearly equal, and constitute nearly an equal proportion of all the deaths occurring in each State. In other words, these two classes of disease are in a great measure supplementary to each other. I have since analyzed the census for 1850 in the same way, and find the figures given for 1860 fully corroborated.

I allude to this subject again, in consequence of a paper in the *London Medical Times and Gazette* for 1863, on "Popular Errors in regard to Diseases," in which the author has undertaken to disabuse the public as well as the professional mind, in regard to consumption. The following are some of the notions he presents and authoritatively disposes of.

"Ague and consumption have long been regarded as antagonistic diseases, so much so that residence in an aguish district is sometimes recommended as a preventive and arrestive of consumption. Dr. Peacock some time ago showed that nothing can be farther from the truth than such a notion."

Our table, on the contrary, confirms the popular notion, and shows most unmistakably that these diseases abhor each other, so to speak;

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and that nearly in the proportion that one is present the other is absent. By this it is not meant that one of the diseases has any power to extinguish the other, but that the surroundings which favor the one seem not to be promotive of the other; or that the causes of one are so rife and fatal as to absorb the pabulum for the other. It may be said that by the term "ague" it was not meant to include all miasmatic fevers; but if "fever and ague" alone is meant, it is none the less evident from the table that the well-known aguish districts are those which are most exempt from consumption, and *vice versa*.

"But the popular error about consumption perhaps the most common and most mischievous, is the supposed influence of climate upon this disease. The popular belief is, that consumption is more rife and more rapidly fatal in northern than in southern latitudes, and therefore the first desideratum for a consumptive northerner is either residence under a southern sky, or, if this cannot be had, at any rate a cautious avoidance of the supposed influence of his own climate. The idea of a necessary connection between consumption and a cold, wet, and variable climate is quite at variance with the facts of common experience, as well as with the results of statistical research. * * * * Again, statistical researches, of late years, prove beyond question that consumption, so far from being peculiar to cold, wet and variable climates, exists in all latitudes, and that, as a rule, the farther we go south the more rife the disease and rapidly fatal its progress."

If this be so, the laws for the development of disease, or the modes of elaborating statistics must differ more in Europe and America than would be readily admitted. That consumption is peculiar to, if this means exclusively limited to, cold, wet and variable climates, no one will contend; or, that the farther we go south the more rapidly fatal its progress, we would not dispute, but think there are good reasons for coinciding with such a view, on account of the debilitating nature of a hot climate. But that it is more rife the farther we go south, and that it is not directly connected with wet and cold, we cannot admit. The statistics on which the author bases his assertion are neither given nor referred to; but it is not likely that any table can throw so much light on this point as the one referred to, showing, as it does, the uniform results of two decennial registrations, each of them made simultaneously throughout all the States of this vast region, embracing every variety of climate and surface, and made under uniform instructions. However imperfect may have been the diagnosis, or the operations of the marshals, the errors would be alike distributed throughout, and no probable errors would essentially vitiate the great result, that, in the United States at least, whatever may be the combination of causes, deaths from consumption increase constantly and uniformly from south to north, until it victimizes nearly ten at the north to one at the south. We cannot believe that, were the census of all Europe to be taken at

once and under uniform instructions, as has been done in this country, the result would be essentially different.

"People see and hear of more deaths from consumption among the young and middle-aged than among the old, and therefore infer that consumption is a disease almost exclusively of early and middle life. * * * * The Registrar-General's Report teaches us that, in proportion to the number of old men living, consumption makes just as great havoc among them as it does among the young and middled-aged."

The prevailing impression is undoubtedly as above stated. Taking the returns as they stand, it would appear not only that deaths from consumption are *as* common in old age in proportion to the numbers living, but very much *more numerous* than in early and middle life. Still, every pathologist knows that *tubercular* disease, after fifty years of age, is exceedingly rare as a cause of death, and in an octogenarian is perhaps never found. In the first period, too, a large proportion of deaths ascribed to consumption should be charged to common diseases of nutrition; so that could our returns under this head be reduced to strictly tubercular disease, there is little doubt that the majority of deaths from this cause would appear between the ages of twenty and forty years.

ADVISORY MEDICAL BOARDS FOR INSANE ASYLUMS.

[Communicated for the Boston Medical and Surgical Journal.]

SOME remarks under the above title, and over the signature of *, were submitted (in this JOURNAL of Nov. 10th) as a review, in part, of an article published in the number for Oct. 13th, entitled "Medical Management of Insane Women." The party reviewed again appears (in the number of Nov. 24th) with what he probably considers a reply. But as the critic in his excitement confines himself mostly to what was *not* and what *might have been* said, it is unnecessary to follow him through all his nine pages of miscellaneous assertions and undignified allusions—alike a waste of time and valuable Journal space. But a few additional thoughts, it is hoped, will not be considered as uncalled for or out of place.

The incoherence of our critic appears on the slightest examination. He "appeals to the *experience* of every candid practitioner," in support of his theories, and then says, "these points have never been estimated, if indeed suspected," &c. Why appeal to the experience of medical men on points they have not examined or suspected? It may not be thought a recent discovery that physical disease often exists with and aggravates mental alienation, and, health returning, the mind improves; but that any amount of physical suffering is sufficient, without predisposition, to *produce* insanity, has never been demonstrated.

But the misrepresentations of our critic are of the most serious character. In his bundle of alleged contradictions appear several distinct statements devised for the occasion. By reckless and extravagant expressions he seeks to obscure the real objections, simply and fairly stated, to the practical working of a separate board of medical advisors for our hospitals for insane. But no candid reader will be deceived as to the true significance of the subject, or the disabled condition of the writer who resorts to such means to sustain his discomfited arguments.

A recapitulation of the position assumed may be concisely stated. There seem to be many disadvantages connected with such a permanent board of advisors as recommended, and no real advantage over existing arrangements; and it was attempted to show the uselessness of such a board for all practical purposes, without giving to it such powers and privileges as would make it an evil and a nuisance to the real superintendent, if he were a competent medical man. But another objection to such a board as contemplated may be mentioned, more serious than any before urged. If it were known by the female patients in our hospitals that such special advisors were appointed, every bearing-down pain in the loins, and every feeling of weariness in the back, &c.—sensations arising from functional disturbances peculiar to the sex—would be dwelt upon and exaggerated by minds already unbalanced and morbid, and there would be no peace for the patients until the knight of the speculum had been summoned, a search for the imaginary demon instituted, and an attempt made to drag him from his hidden retreat. Managers of insane asylums will find existing delusions sufficiently numerous to make them hesitate in creating, unnecessarily, a cause for new ones so prolific.

Comment is made by our critic because the author's name was not published. Was that necessary? It was deposited with the proper parties, and the writer is responsible for the facts and the logic, and not for the inferences drawn from them by others. The little offering was brought modestly to the great pyramid of thought, and there left alone—no vulgar desire existing to see the name at once carved thereon. A simple asterisk marked it as not editorial. But the "little twinkling star" was sought among the fossils and not found. Forthwith the critic seizes his pen and writes—"if not a fossil, an impostor"! He peers curiously, if not insanely, at the signature for the light and reason of the article itself, and, not obtaining definite satisfaction, concludes it is all an "airy nothing," but makes one desperate charge with "the whole panoply of his gorgeous rhetoric" for its annihilation. He had better restrain his temper and extend his observation.

In regard to the late Commissioners in Insanity, defended with so much warmth, no disrespect was intended or expressed. No doubt was raised as to their private worth, and no complaint was

made of their public services. The question was merely asked why all the good men and true, experts in the speciality under investigation, were passed by. That those selected were obliged to educate themselves for that particular task at their own expense after their appointment, is admitted, rather unwittingly, by our critic. That one of them escaped the offer of a superintendency of an asylum, not because he was unqualified, after his term of service as commissioner, but because he was not a physician, is too absurd for further notice or demonstration.

Considerable anxiety is expressed in regard to the effect of our article, especially concerning the insults to brother superintendents. If there are any to be found who favor such a board of advisors as recommended, they are not among the writer's acquaintance. They may not endorse all the objections made; but that they do not *all* feel insulted by our views already expressed, evidence is at hand. Some well-known writers in the specialty of insanity, and practically acquainted with the management of hospitals, approve the objections stated. One writes:—"We are all much pleased with your remarks; they express our views completely." And another, deservedly eminent as a practical superintendent: "There is just as much occasion to have an oculist, an aurist, a chiropodist, to the end of the chapter of specialties, attached to our institutions for the insane, as one for that under consideration." And another, not a superintendent, but a physician sound in judgment and of acute observation: "The general practitioner has often to witness and lament the deleterious influence of some specialist in the department named. The minds of a few women in a neighborhood become disturbed with the idea that something is *wrong* about the *womb*. The disease (imaginary) becomes contagious; the delusion extends, and the panic becomes general, till most of the women in the community are made anxious and miserable." All these, brethren of our "own household" and otherwise, will be surprised to learn, by our critic, that they have been insulted and did not know it.

In the last communication of our reviewer it is said: "Little has been undertaken or accomplished for the cure of insane women at our public hospitals." Does he mean to say that superintendents have not discharged, *as cured*, as many women as men? Where are the statistics? Such sweeping declarations, without visible means of support, are neither creditable to the author nor complimentary to living superintendents, and are a stigma upon the hard-earned fame and revered memory of the honored dead. *

ASST. SURG. HOWARD, U.S.A., has prepared a model of a new ambulance, combining many and important advantages and conveniences not possessed by any form of ambulance hitherto in use.

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OZÆNA AND STRUMOUS DISEASE TREATED BY MEDICATED INHALATION—A NEW INHALING APPARATUS.

By CHARLES WARREN, M.D.

[Communicated for the Boston Medical and Surgical Journal.]

MRS. F., aged about 30, of rather delicate organization, but not sickly, applied to me Nov. 2, 1863. She stated that for the last three years she had suffered from an exceedingly offensive discharge from the left nostril. She described the stench as being almost insufferable. She had been treated by several respectable physicians, and had in addition exhausted almost the whole catalogue of nostrums, without receiving any benefit. I commenced the treatment by means of shower syringes, and continued it for nearly four months, throwing through the nostrils, in both directions, the following remedies in weak solution, viz., sulphate of copper, nitrate of silver, sulphuric acid, acid nitrate of mercury and chloride of soda; giving internally sulphate of iron and quinine, and syr. sarsap. comp., with iodide of potassium. This plan of treatment made no perceptible change in the case, and I told her I thought it useless to continue the showering any longer, but would try inhalation if I could invent some way by which she could inhale through the nostrils; thinking by this plan that I might possibly reach the seat of the disease, if I had not already done so. After much experimenting I succeeded in preparing an instrument, and commenced the treatment by causing her to inhale, three times daily, the following:—*R.* Iodini, gr. xv.; potassii iodidi, 3 ss.; ipecacuanhæ, ʒ iv.; conii, ʒ ij.; cimicifugæ, 3 v.; scillæ, 3 ij.; ether. sulph., liq. sodæ chlor., aa f 3 v.; spt. vini rect. et aquæ, Oi. *M.* The effect was truly magical. At the end of one week she reports, the fœtor has wholly disappeared. Two weeks later, no return of fœtor and the discharge diminished one half. At the end of six weeks both had almost wholly disappeared.

She says to-day, Nov. 30th, in answer to my inquiries, "I have not been troubled any to speak of for the last six months. Two or three times during that interval, when I have taken cold, there has been a slightly increased discharge from one nostril, which subsided as the cold passed off."

Miss H. T., aged 20, of strumous constitution, always delicate, has been failing in health for the last three years; is hoarse, and sometimes partially aphonic; has had several severe attacks of hæmoptysis; cough very distressing, being aggravated by chronic pharyngitis and diseased tonsils. She is feeble, emaciated and anæmic; lower extremities swollen; respiration hurried; pulse frequent; appetite poor. Dulness and tenderness on percussion in right clavicular and subclavicular spaces, involving apparently about one third of the right lung; imperfect expansion of the chest and suppressed respiration over that portion of lung.

The symptoms in this case seemed to indicate phthisis far advanc-

ed, but the physical signs did not warrant that conclusion, as I could not discover any particular indications of softening, but the diseased lung was evidently in a state immediately preceding it.

From the whole aspect of this patient, and the fact of her having been treated by a well-educated physician, and having been rapidly declining for the previous six months, I could give little or no encouragement, and had serious doubts whether anything I could do would be of any avail. I however told her that if she could consent to have her tonsils removed I would then decide whether or not I could do anything more for her. She immediately consented, and I removed both tonsils, one of which contained a considerable quantity of a lardaceous matter. She bore the operation well, considering her enfeebled condition; the parts healed kindly, and in one week after the operation she commenced medical inhalation. I gave her iron, recommended a generous diet, and as much exercise in the open air as she could well bear. At the end of two months there was evidently some general improvement. By auscultation at this date, a feeble respiratory murmur was distinctly audible, and the sounds on percussion were more resonant, which fact she distinctly noticed herself. The cough, which had for a long time been very distressing, although somewhat relieved, still continued obstinate. Under this course of treatment she continued to improve, the cough slowly subsided, and by the early part of the next summer had nearly disappeared. She had gained her usual amount of flesh and strength, and in every other way seemed quite well.

Medical inhalation is no new thing. Brought into notice long since, it has been strenuously advocated by some, and combated by others of the profession. No doubt the excessive claims urged for it by those who first introduced it, operated disadvantageously. It was natural to doubt a method which was to cure so many diseases. But apart from this, there can be no dispute that it is, when properly used, a most efficient mode of introducing remedies into the system. The direct and speedy result of the treatment in the case first reported, leaves no room to doubt that it was the local effect of the remedy which caused the improvement in the symptoms. In regard to the second case reported, there may be some doubt as to the relative value of the tonic and the local treatment. Evidently they helped each other.

The point which I wish to present is, the ease and comfort with which the inhalation was performed by means of the apparatus mentioned. It seems the easiest thing in the world to get up an inhaler, but how many attempts have ended in futility. Certainly I could find nothing to suit my purpose, and I was obliged to have resort to my own invention. As will be seen by the cut (see advertisement on last page) it is as simple as it can well be. Compact, portable, adapted both to the nostrils and the mouth, it meets a want long felt, and as such is offered to the profession. This inhaler consists

of a bottle or reservoir to contain the liquid to be vaporized, with a cap which is fitted closely on the neck of the bottle. There are two vertical tubes, extending upward from the said cap, and open at their lower ends into the interior of the bottle. There is also a third tube, open at both ends, extending from the cap down into the bottle and nearly to its bottom, through which the air passes in being drawn into the bottle and through the liquid, causing an agitation, during which the vapor is thrown off and drawn into the air passages through the two nostril tubes. These nostril tubes are supplied with an elastic air-tight valve, made of rubber, which, during the act of inhaling, is pressed up against the nostrils by the thumb and index finger of the left hand so as effectually to close them.

ON THE CONDITION OF THE STOMACH AND INTESTINES IN SCARLATINA.

BY SAMUEL FENWICK, M.D., LATE LECTURER ON PATHOLOGICAL ANATOMY AT THE NEWCASTLE-ON-TYNE COLLEGE OF MEDICINE.

THE object of this paper is to prove the following propositions:—

1st. That the mucous membrane of the œsophagus, stomach and intestines is inflamed in scarlatina.

2d. That desquamation of the epithelium of these parts takes place.

3d. That notwithstanding the anatomical changes in the mucous membrane of the stomach, the formation of pepsine is not prevented.

4th. That the condition of the skin is similar to the condition of the mucous membrane in scarlatina.

In support of the first proposition, the microscopic examinations of the mucous membranes of the œsophagus, stomach and intestines were detailed in ten cases of death from scarlatina during the first week of illness, and in six cases who died in the second and third week of the fever. The first effects of the scarlatina poison upon the mucous membrane of the stomach were shown to be the congestion of the bloodvessels and the stripping of the epithelium from the tubes and the surface of the organ, and also the softening of the tissues. The tubes are greatly distended by granular and fatty matters, or by small cells intermixed with granules, and in some cases they are lined by a newly-formed membrane. Sometimes no normal cells can be distinguished; in other cases they are present, but are scattered irregularly. After the second or third week the tubes are found less distended than at an earlier period, and whilst their closed ends are still loaded with granular matters, which greatly obscure the gastric cells. These become more evident towards the surface of the mucous membrane. The cells at this period are sometimes very large, sometimes loaded with fat or coated with granules, and seem to have but little adhesion to their base-

ment membrane, as they readily separate from the tubes, but adhere closely to each other. The effects of the inflammation upon the intestines seem, in slighter cases, to consist in the effusion of granular and fatty matters into the mucous membrane; but in more severe cases the tubes of Lieberkühn are obstructed by epithelial cells, whilst extravasations of blood take place in the villi, and these, with the rest of the mucous membrane, are loaded with small cells and granules. In one case the mucous membrane was entirely stripped of villi, excepting a few fragments which still remained, and the enlarged and prominent openings of the follicles of Lieberkühn gave its surface the appearance of a sieve. In some instances in which the pancreas has been examined, evidences of disease presented themselves.

The second proposition was stated to be more difficult of proof, inasmuch as vomiting usually occurs only in the first stage, and the author had no opportunity of examining the vomited matters at this period of the disease. In one case, in which vomiting took place in the third week, fibrinous casts of the stomach tubes were discovered, and inflammation of the mucous membrane was proved to have existed by *post-mortem* examination. The chief reason upon which the opinion that desquamation of the epithelium occurs was founded, was from the microscopic examination of the stomachs of those who had died of this disease. The contents in recent cases consisted of pieces of fine membrane, of cells, and of granules and shreds of membrane. The membranes were of the shape and size of the tubes of the stomach, and were covered with granules and fat. The cells varied from 1-1200th to 1-2200th of an inch, and were usually fringed with fine pieces of membrane. In cases of longer duration the membranes were covered with cells, and were also of the size and shape of the stomach tubes. In order to ascertain if these appearances were trustworthy as evidences of inflammation, the contents of the stomachs of forty-five subjects were examined at the Middlesex Hospital, the condition of the mucous membrane being at the same time noted. In only one were there any fibrinous casts, and it was in a case of acute gastritis. In eighteen there were only separate cells, chiefly of the columnar form, and in none of these was there any inflammatory action. In eight cases casts of the upper parts of the tubes were plentiful, composed only of healthy conical cells, and in all the mucous membrane was in a natural condition. In eighteen there were either plugs formed of cells and granules from the secreting parts of the tubes, or the casts of conical cells were overlaid with granular matters, and in all of these the stomach was more or less inflamed. Two cases of gastritis, unconnected with scarlatina, were also quoted as examples of the forms in which casts of the stomach tubes appeared in vomited matters during life, and the author stated that he had detected casts of the stomach tubes in matters vomited by persons affected with gastritis connected with

of a bottle or reservoir to contain the liquid to be vaporized, with a cap which is fitted closely on the neck of the bottle. There are two vertical tubes, extending upward from the said cap, and open at their lower ends into the interior of the bottle. There is also a third tube, open at both ends, extending from the cap down into the bottle and nearly to its bottom, through which the air passes in being drawn into the bottle and through the liquid, causing an agitation, during which the vapor is thrown off and drawn into the air passages through the two nostril tubes. These nostril tubes are supplied with an elastic air-tight valve, made of rubber, which, during the act of inhaling, is pressed up against the nostrils by the thumb and index finger of the left hand so as effectually to close them.

ON THE CONDITION OF THE STOMACH AND INTESTINES IN SCARLATINA.

BY SAMUEL FENWICK, M.D., LATE LECTURER ON PATHOLOGICAL ANATOMY AT THE NEWCASTLE-ON-TYNE COLLEGE OF MEDICINE.

THE object of this paper is to prove the following propositions:—

1st. That the mucous membrane of the œsophagus, stomach and intestines is inflamed in scarlatina.

2d. That desquamation of the epithelium of these parts takes place.

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ment membrane, as they readily separate from the tubes, but adhere closely to each other. The effects of the inflammation upon the intestines seem, in slighter cases, to consist in the effusion of granular and fatty matters into the mucous membrane; but in more severe cases the tubes of Lieberkühn are obstructed by epithelial cells, whilst extravasations of blood take place in the villi, and these, with the rest of the mucous membrane, are loaded with small cells and granules. In one case the mucous membrane was entirely stripped of villi, excepting a few fragments which still remained, and the enlarged and prominent openings of the follicles of Lieberkühn gave its surface the appearance of a sieve. In some instances in which the pancreas has been examined, evidences of disease presented themselves.

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diseased kidneys, with inflammatory dyspepsia, and other forms of inflammation of the gastric mucous membrane. It was urged that if casts of the gastric tubes can be discovered during life in cases of gastritis, and if in scarlatina this condition exists, and casts have been found in the stomach after death, there is every probability that desquamation of the epithelium takes place in this organ, as it does in the skin and kidneys.

In support of the third proposition, the results of the following experiments were given in three cases of scarlatina:—Ten grains of hard boiled white of egg were digested at a temperature of 90° for twelve hours in an infusion of the mucous membrane, to which three per cent. of hydrochloric acid had been previously added. The average loss of albumen was three grains and two thirds. Similar experiments performed with the stomachs of eleven males who died of various diseases at the same hospital gave an average loss of four grains; so that there had been scarcely any diminution of pepsine produced by the fever. As a contrast to this were the results of similar experiments upon four cases who died of typhus fever. In two of these the albumen had gained three grains of weight by imbibition, and was not at all softened; whilst in the other two it was softened, and one had lost only half a grain, the other one grain and a half in weight. But as the activity of the digestion must depend not only upon the relative amount of pepsine, but also upon the bulk of the mucous membrane, this was also attempted to be estimated. The average weight of the mucous membrane of the stomachs of ten males dying of various diseases at the Middlesex Hospital was eighteen drachms, the weight of two recent cases of scarlatina was eighteen and sixteen drachms (the latter being in a boy), whilst it only amounted to fifteen drachms in one who died in the third week of illness. In four cases of typhoid fever the average weight of the mucous membrane only reached eleven drachms.

Under the fourth proposition it was stated that the skin had only been examined microscopically in three cases. In the first, in which the patient died after a few days' illness, the only morbid appearance in the cutis was an occasional minute extravasation of blood in the neighborhood of the sudoriferous ducts. The rete mucosum was greatly thickened, and numerous round cells with large nuclei were everywhere visible, intermixed with the natural cells. The basement membranes of the sweat-glands were thickened, and the epithelium lining them was so much increased that in most cases it obstructed their channels. In some of the sweat-glands the coils of which they were composed were loaded with coagulated blood, and were greatly and irregularly distended. In the other recent case the appearances were similar, excepting that the external layers of the cuticle were stained with blood in minute patches, and the sweat-ducts were also reddened; but there were no extravasations of blood either in the glands or cutis. In some of the ducts the epithelium was detached

from the basement membranes. In the case of a man who died during the third week the sudoriferous tubes were still choked up, but in the glands the epithelium seemed in many places to be torn away, leaving the basement membranes bare, or only covered by ragged particles. The cutis was in a natural condition.

The author stated that although he had, in accordance with the usual custom, described the appearances of the skin and mucous membranes as the results of inflammation, yet that certain considerations suggested the idea that the term when so used was perhaps misapplied. In scarlatina, we find that in each part the morbid condition is mostly confined, in the first instance, to the basement membranes, and consists in the formation of layers of new cells, which, in the skin, are transformed into cuticle of natural appearance, and in the stomach contain pepsine. If future researches should prove that a similar condition occurs in the kidneys and other parts, it will be necessary to look upon the structural changes produced as resulting from increased physiological rather than from pathological action; and that the primary effect of the scarlatina poison is suddenly and violently to stimulate the natural cell-growth of the various secreting organs.

Dr. Wilson Fox said that he had listened with much pleasure to Dr. Fenwick's very able paper. It had possessed an especial interest for him, inasmuch as Dr. Fenwick's observations on scarlatina confirmed those which he had himself communicated to the Society in 1858, on the condition of the stomach in a variety of acute diseases, including variola, typhoid and puerperal fevers, pneumonia, peri- and endo-carditis, cholera and many others, in which he had found the stomach in a condition very closely resembling that described by Dr. Fenwick, and which, after Prof. Virchow, he had designated as one of acute catarrh, the mucous membrane being hyperæmic, swollen, and cloudy-looking, and covered with very tenacious mucus. This condition he (Dr. Fox) had always found associated with a granular condition of the epithelial cells, which were shed with great facility both from the surface of the membrane and from the interior of the tubes; and were found in great numbers, and often enlarged and presenting multiple nuclei, in the tough mucus covering the surface. Since he had made these observations he had been in the habit of regarding the furred condition of the tongue in acute diseases as an index of the same irritative production of epithelium through the gastric intestinal tract. He had also at the same time been able to point out, on anatomical grounds, that chronic affections of the stomach were frequently associated with chronic affections of other organs. On some points of detail Dr. Fox said that his observations differed from those of Dr. Fenwick. He (Dr. Fox) had not examined with the microscope the stomachs of patients dying from scarlatina, but the appearances which these presented to the naked eye corresponded so closely with those to which he had

alluded that he spoke on them with more confidence than he should otherwise feel inclined to do. He still thought, as he had pointed out in his original paper, that the granular matter which Dr. Fenwick described as occurring free in the tubes, was really contained in the interior of epithelial cells, and that it was only in the severest cases of acute gastritis in which the cells became at once broken down, that the granular matter was found free. With regard to the casts of tubes described by Dr. Fenwick, he (Dr. Fox), not having examined the stomachs of scarlatina patients, could not make any positive observations, but he had never found any in the cases of other diseases which he had mentioned. He had, however, often observed appearances in the mucus having a most deceptive resemblance to casts, from the manner in which the epithelial cells were agglutinated by the tough mucus. He did not think that these casts, if they did occur in the stomach, could be of a fibrinous nature, any more than the first epithelial desquamations from the kidney in the early stages of Bright's disease possessed that character; nor was he of opinion that the membrana limitans of the gland separated with the epithelium. He believed that when the membrana limitans (when it existed) was destroyed or injured, the power of reproducing epithelium was impaired or lost. Epithelium often separated in continuous masses from mucous surfaces and from the interior of glands. Such desquamation was not only exceedingly common under conditions of irritation, but was also, under some circumstances, a physiological act. It had been noted long ago by Mr. Goodsir, during digestion, and many recent observations on this subject were contained in Virchow's Archiv. He (Dr. Fox) was of opinion that Dr. Fenwick's observation, though very valuable as evidencing the participation of the stomach and intestines in the consequences of the scarlatina poison, did not show anything specific in that organ, or peculiar to the diseases in question.

Dr. Webster had listened with great gratification to the paper, especially as it confirmed what he had observed as to the employment of remedies in scarlet fever. It gave a great additional value to the minute researches of the author that they had a practical bearing in treatment. Dr. Webster then related instances in which the internal administration of irritating remedies, especially purgatives, did harm. He referred also to the bad effect of diet which was administered to some children in scarlet fever to tempt the appetite; and lastly, alluded to the good effects of sponging the skin with tepid vinegar and water.

Dr. Murchison said that he had examined the stomach in twenty cases of scarlet fever, and found, on the whole, similar appearances to those described by the author; but he agreed with Dr. Fox that the granules were in the interior of the epithelial cells. He had not seen any casts. He thought, however, that the author had called attention to an important complication; but he (Dr. Murchison) could

not agree that it was of universal occurrence, as he had examined the stomach in several cases of scarlet fever, and had found it quite healthy; and, on the other hand, he had found changes like those in scarlet fever in the stomach of those who had died of other diseases.

Dr. Fenwick said the question was one of experience, and continued examination would no doubt settle the question. In every case that he had examined during four years he had found the changes he had described. In some cases of scarlet fever the skin was not affected, and yet it was still called scarlet fever, and just so in a few the stomach might escape. Still we should in a large number find evidence of inflammation of the stomach. The paper was chiefly to draw attention to the subject. In reply to Dr. Fox, he said that he had made the sections vertical with a double-bladed knife, and examined them with a low power and by help of a parabolic condenser. He had found casts best in children who had died a few days after the disease began; but in other cases he had not found them, and sometimes he had found only plugs, as described by Dr. Fox. These plugs, he had no doubt, were the result of inflammatory action.—*Proceedings of Royal Med. and Chirurg. Society, in London Lancet.*

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON: THURSDAY, JANUARY 3, 1865.

PHYSICAL EDUCATION IN SCHOOLS.—In a recent article on our Boston schools we called the attention of the members of our profession at home to the system of over-study which has become so grave an evil in their administration. Knowing how powerful the influence of the family physician is in the household, and how largely our profession is represented in the School Committee, we expressed the belief that much might be done by ourselves privately and officially to break up a practice which so seriously threatens the future health of our inhabitants. That its cause and remedy were not to be looked for in the home from which the child is sent, but lay with the School Committee itself, we have always maintained, and are happy to see that those who have the best opportunities of impartial judgment hold the same opinion. In the last report of the Superintendent of the Public Schools we find the following admirable remarks in relation to the grammar schools. The public knows that the entire management of its schools, of both teachers and pupils, is in the hands of the School Committee, and that this body is wholly answerable for the evils thus faithfully exposed.

"But while these schools are justly entitled to high commendation for their general excellence, it must be admitted that they are not in all respects what they might be; that there are faults and imperfections, in some of them at least, which demand attention. I shall now

indicate one particular wherein there seems to be need of improvement. I refer to what is called the "high-pressure system," which appears to me to be the most prominent evil. I am fully convinced that, in some of these schools, the pupils are overworked—that they are overworked to such an extent as to constitute an evil of great magnitude. This evil exists in both the upper and lower classes, but it is more fully developed, and more injurious in its effects in the highest divisions, where the pupils are competing for medals. It is found in the schools for boys as well as in the schools for girls, although it is more general and more harmful in the latter. The baneful effects of this mistaken system are not limited to a few individual pupils, who come to school in delicate health, and without the ordinary power of endurance. They are destructive to the health of scores and hundreds who commence their school life with sound and vigorous bodies. This hurtful system operates in three ways to the injury of pupils—physically, by preventing bodily exercise and recreation; mentally, by exacting too constant and too severe intellectual application; and morally, by unnecessarily tempting children to deceive in order to escape the consequences of failures in lessons. Is it the design of Providence that all the brightest girls should have the most feeble and puny physical powers? But this absurd theory could be established as a scientific fact, by an examination of our schools, if it is only admitted that the children have not been stunted by the processes of education. Did my limits permit, I could produce evidence enough to satisfy any candid mind that over-tasking is a very great evil in our schools—that it is an evil which an intelligent community ought not to permit.

"But how does it happen," I am often asked, "that parents do not complain of this evil more frequently and more loudly, if it is what you represent it to be?" To my mind the answer is obvious and sufficient. In the first place there are complaints. Not a few come to my ears from sources which deserve the highest credit and confidence. But the reasons why they are not more are various. Many parents are not aware of the evils which their children suffer. Many are unwise enough to suppose that children cannot be kept too close to their books, that the harder they can be made to study the more capable and successful they will be in after life. A great many keep silent because they are ambitious that their children should receive the distinction of a diploma or a medal, and they fear that any interference with their lessons will defeat this darling object. A great many more are constrained to abstain from complaints by the entreaties of their children, who fear that any complaints about their tasks will cause them to be degraded in rank, which, in their estimation, is a mortification terrible to think of. These are some of the reasons for the apparent acquiescence of parents in this unwise system.

"I shall not undertake to say who are to blame for the existence of this evil. Probably the blame should be shared by several parties. There are certainly some members of the Committee, and some teachers, who see and lament it, and would remedy it if they could. I think there are teachers who put on the 'high pressure,' not because they think it for the good of their pupils, but because they feel compelled to do so for fear of being considered inefficient, if their pupils do not come up as high, on examination, as the pupils of certain other schools."

"But there is another way in which nearly all the pernicious effects of which I have spoken might be prevented. It consists in simply obeying the Regulations, in letter and *spirit*. In the first place the provision that prohibits out of school lessons for girls, should be sacredly regarded. This provision is now violated both directly and indirectly. In some schools it is put to the vote of the children to decide whether they will consent to get lessons out of school. Is this right? Is it proper? Of course the pupils will vote as their teachers wish them to. The provision is violated indirectly by permitting or requiring pupils to come before school hours, and remain after school hours, for the purpose of learning their lessons. The rule in regard to recess is violated. Pupils are permitted or required to study at recess, instead of occupying the time prescribed in exercise and relaxation and recreation. I would not be understood as saying that these rules are universally disregarded. Nor do I think they are generally disregarded. Still, they are violated to an extent which requires attention.

"I regret to say that the provision in Section 21 of Chapter VIII. of the Regulations is not generally complied with. This provision requires gymnastic exercises each half day, and a liberal construction of its language would permit such exercises *twice* each session; and if it were faithfully carried out in all the departments of every school, it would operate very powerfully both in preventing and in counteracting the effects of the 'high-pressure' system."

We were pleased to see that at its last session the Committee seemed to be somewhat awakened to the importance of a matter it has so long overlooked, and is about to enforce a thorough system of daily gymnastics and military drill in all the schools. Of the importance of this element in the education of our youth of both sexes we have already spoken at length, and it will undoubtedly prove to be a remedy in part for the evils of over-study. Prevention, however, is always better than cure, and we trust that the Committee will not rest satisfied with this slight attention to the latter.

With the public itself must rest the final responsibility of appointing the proper persons to this body. It has not, however, done its duty in this respect. Persons have been nominated and elected within a few years, who were no more fit to advise in the education of our children than a Blackfoot Indian, and who were placed on the ticket merely on political grounds. It would be quite as proper to appoint our teachers upon the same system, and we trust that some other method may soon be adopted by which the nomination of the School Committee may come from some higher quarter than a ward-room committee.

DIABETES SUCCESSFULLY TREATED BY BRAN. *Messrs. Editors*,—I was somewhat annoyed at seeing in a recent number of the JOURNAL (page 402) a case reported by me under the following caption, "Case of Diabetes successfully treated by Bran." The caption was not mine, and the case was reported simply as one of diabetes. I did not suppose that the bran bread had any but the most indirect influence in the cure, nor is there anything in the words of the report to lead to such a supposition. In fact, the patient was not directed to use bran, but that coarse, more or less branny flour called "shorts," and not

having the shorts at hand he used the bran. The only benefit I can conceive of in the use of either of them, or in the Camplin bread, is that they exclude the use of large quantities of common flour bread in which large amounts of starch are found.

I would not have alluded to this subject had not some persons already caught at the bran as an important remedy; and because I would not be guilty of gravely setting forth a trivial concomitant as a specific or effective remedy. We have too much of this already. In this instance, the caption might have been, with equal propriety, "diabetes successfully treated by ginger and water," or by "paracentesis for varicocele," which happened to have been done while the patient was under treatment. The improvement was no doubt mainly owing to the animal diet and to rest.

AVC. A. GOULD.

DIED.—In Roxbury, Dec. 17th, 1864, Dr. John Lawrence Fox, aged 54 years—surgeon U.S.N.

Dr. Fox was a native of this city, and a son of the late Ebenezer Fox, of Hollis, N. H. He was prepared for college at our Latin school, while under the successful direction of Mr. Ames, and graduated at Amherst in the class of 1831. He pursued a course of medical study at Philadelphia, and with the late Dr. A. L. Peirson, of this city, and received a medical degree at Harvard in 1835. After an interval of two years, devoted in part to classical teaching, but chiefly to studies connected with his profession, he passed a most honorable examination and received the appointment of Assistant Surgeon in the U. S. Navy—his commission bearing the date of Sept. 6, 1837. Since his appointment—a period of about twenty-seven years—his services have been in almost constant requisition—thirteen years and eleven months having been passed in sea service, and eight years in the charge of the Naval Hospitals at Chelsea and Brooklyn, and as an assistant in the Medical Bureau at Washington.

His earliest cruise of importance was with Capt. Wilkes in the exploring expedition, and during the four and a half years to which it was protracted he discharged his arduous duties with signal ability, and secured a reputation and popularity which told much to his advantage in procuring desirable appointments in his subsequent cruises. Early in the spring of the present year he was appointed Fleet Surgeon of the North Atlantic Blockading Squadron, then rendezvousing in the neighborhood of Fortress Monroe. Under a pressure of responsibility, second to none but that of the Admiral himself, involving the general supervision of the medical staff of the whole fleet—the largest and most formidable, perhaps, that history has recorded—he worked on most indefatigably, till his naturally robust constitution yielded under the burden, and he reluctantly consented to a temporary withdrawal from the scene of his labors. He reached his home at Roxbury about a fortnight since in a state of great prostration, and failed gradually until death set a seal to his earthly record. His devotion to the service of his country in this hour of her stern trial will be the brightest item of that record—to tear himself from this service cost him the severest struggle of his life. "Let me die at my post," was the last aspiration of his patriotic soul, as he was almost literally forced from his ship by the more considerate hand of fraternal affection.

His brother officers and the generous tars who have known him only to love and respect him, will long cherish the memory of his worth and kindness, and not a few of our citizens who have met with him abroad, on the sea and in foreign ports, will recall his manly form, his frank and open manner, and his generous, whole-souled disposition.—*Salem Register*, Dec. 22.

CONDENSED MILK.—The great value of this article, and its importance to the Union army, by whom enormous amounts of it are used, will commend the following account of its mode of preparation at the milk factory at Wassaic, Dutchess Co., N. Y. (condensed from the *New York Tribune*), to the attention of our readers.

The company have this year contracts with somewhat over fifty farmers for the daily delivery of 10,000 quarts of milk, six days in the week, at three cents a quart. It is required to be carefully strained and thoroughly cooled upon the farm by ice or cold spring water, some hours before it is hauled to the factory, because it will injure in close cans if carried while it contains any animal heat. There are two receiving vats outside of the factory, under sheds, where the wagoners drive up and place the cans upon platforms. Here the first process in the purification commences. Each can is examined by the taster, who has acquired the same degree of skill that custom-house liquor-tasters have, and which enables him to determine whether the milk is sweet, or has been "extended" at the spring. Samples are often taken and set away in basins, properly marked, to prove the quality of each dairy. It is found that some farms naturally yield milk of a superior quality to others. The cows are generally what is called "native stock." Those which give the greatest number of quarts of milk in a year are the most valuable.

Besides the use of steam as a motor and heater, it is the great agent of cleanliness, which appears to be considered next to godliness in this establishment. It is a rule of this factory that everything that is used for milk once must be washed with steam and water before it is used again. The least particle of milk adhering to a vessel, and becoming sour, contaminates the next mess. It is on this account that they prefer to wash the farmers' cans, as it is impossible to do it as well with cold or hot water as it is done by steam. Milk sent to the city in cans by farmers is often injured by the neglect of those whose duty it is to keep the cans perfectly clean and sweet.

As soon as the cans are emptied they are, one after another, turned bottom up on a stand and a strong jet of steam let on for a minute, and this is followed by a jet of water, which washes away every particle of adhering milk, and all the washings flow away into the creek.

The milk being strained and cooled at the farm, and brought in under cover of blankets and buffalo skins, is received at an average temperature, in summer, of 56° to 58°, and therefore it is a very unusual thing to find a can that has any taint of change. Owing to the thorough cleaning of the cans, it is impossible for the milk to become soured by the cause that often affects milk sent to the city—that is, souring of the cans after they are emptied.

Ice, as well as steam, being a necessity of the work, there is a large ice-house connected with the factory; and lately a complete cheese-

manufacturing room has been added, so that, in case of any sudden decrease of the demand for condensed milk, as happened when the sutlers were ordered back from the front, the milk contracted for can all be received and converted into cheese.

How the Milk is Condensed.—We will start from the platform where the cans are received from the farmer, and take the reader step by step through the whole process.

If the cans "pass muster," they are immediately emptied through a fine cloth or strainer into the receiving vat, which holds a thousand quarts. From that the milk flows through a pipe, and is drawn into brass pails which hold fifty quarts each. These stand in a flat tub capable of holding sixteen of the pails at once, which is filled with water that is heated by a coil of steam pipe. Here the milk is heated to 190° to 195° , and in this first process of the work of condensing lies the whole secret of success. This was the discovery of Mr. Borden. He was not the originator of condensed milk. It had been thought of and processes patented before the date of his patent, but all had failed, because the albumen of the milk, if boiled in open kettles, burnt upon the bottom, and if *in vacuo*, coated the pipes and vessel, preventing perfect condensation, and, if heated too high, giving an unpleasant odor to the condensed milk. When thus cooked upon the inside of the condenser, the albumen became an insoluble cement, which required great labor to remove, and which, if not removed, would spoil the next charge.

In this water bath, in these open pails, the albumen is coagulated, without separation from the watery portion of the milk, and a little portion that adheres to the pail is almost instantly removed by placing the pail bottom up over a steam jet, instantly followed by a strong water jet, in the same way that the farmers' cans are so perfectly cleansed. Until this plan was adopted, the work of cleaning off the coagulated albumen was very laborious. Now it is almost instantaneous.

This first process requires but a few minutes, and two men stand ready to hook a tackle to the pails as fast as the contents reach the proper temperature, and hoist them out of the bath and empty them through a fine brass wire gauze sieve into what is termed a "steam well." This is a copper vessel shaped like an egg, standing on end, with about one fourth of the upper end cut off. This holds about seven hundred and fifty quarts—six and a quarter barrels. This well is made with a steam jacket over the lower end, so that the milk, which is already heated almost to the boiling point, is soon brought to that degree, and is then ready to go to the condenser.

This first boiling in the open kettle appears to be another of the requisites in the preparation for the final operation, as it gets rid of something in the milk that tends to make it foam in the boiler; and if there is any defect in the condition of the milk, it is exhibited here in this open kettle, and the deposit of albumen that takes place during the first boiling is easily seen and cleaned off between the changes. There are two of these steam wells, with their accompanying water baths and receiving platforms. From these the milk is taken by what is generally termed suction, through tinned iron pipes, to the floor above, where there are three condensers, or vacuum pans. These in form are somewhat like the steam well, the egg shape being complete

—being four by five feet in diameter, and holding one thousand quarts. In the upper part on one side, there is a window, through which strong sunlight, or lamplight, is reflected to the bottom, and opposite this there is an eye-glass, through which all the movements of the milk are seen, and by that means the boiling is regulated. There is also a man-hole, through which a man enters after each charge is withdrawn, and scrubs the copper bright enough to almost see his face in it. The lid of the man-hole being screwed on, the pan is ready to commence receiving a charge. The first operation is to start a powerful double-action air-pump, which exhausts the air in the vacuum pan until the gauge shows twenty to twenty-five inches.

The cock in the pipe connected with the steam-well is now opened, and the milk rushes up to fill the vacuum. This pipe, by the by, is inserted into the milk from the top, and does not extend quite to the bottom, so that if any sedimentary matter has accumulated there from the boiling, it is not taken up to the condenser. As soon as the first charge is drawn up, more milk is prepared ready in the well for the next demand. The steam is now let on, heating the coil of pipe inside, and the steam jacket outside of the condenser, the pumps being kept in continual operation, and the milk closely observed by the intelligent Yankee girl (one of the "mudsills"), one of whom has charge of each pan, and prides herself in keeping it and all around as neat as she does her person, and all are faultless. In a few minutes she observes the thermometer indicates 190° , and that the milk in vacuo is boiling rapidly. In open air at this elevation it would require 210° , and could not have eighty per cent of the water it contains removed, as is the case in the condenser.

As the boiling goes on, the milk continues to flow in, until 3,200 quarts have been taken up. Then the cock of the supply pipe is closed, and from this time the most watchful care of the attendant is required to keep the heat regular, and the pumps working perfectly.

The pumps stand upon the lower floor, where a stream of cold water flows upon the air chamber, and condenses the steam vapor drawn from the boiling milk into water, which is discharged into a stream constantly flowing through the building. This condensed vapor constantly emits that peculiar odor that we perceive in milk warm from the cow, or during the operation of boiling, and which contains the germ of putrefaction.

When the charge of 3,200 quarts shows by the gauge that it has been reduced to 800 quarts, it is ready for the final operation of purification. The steam is shut off, and its place filled with cold water, the singular effect of which is to instantly increase the heat of the milk to a very high degree. This is called superheating, and the effect is to throw off all the remaining odor, through the discharge of the pumps. This often has such a fetid, sickening smell, that it pervades the atmosphere all around, and affords one of the most convincing proofs of the value of the process that discharges such a substance from our daily food.

From the time the milk is received from the wagons until it is finished in the condenser, about three and a half hours are required for all the operations.

How the Preserved Milk is made, and what it is for.—First, it is for all purposes for which milk is desirable where fresh milk cannot be

obtained, such as in the camps of our army and on board ships, or in any other situation where it is necessary to preserve milk for future use, longer than that already described would keep sweet. The "preserved milk" will keep an indefinite length of time. Its period has not yet been determined.

Now, what preserves it? Sugar, simply. Nothing is added in substance or manufacture, but pure, double refined sugar, which has this curious effect upon the milk: it causes it to part with a greater portion of its water, so that a pound of milk and sugar combined actually occupies less space than a pound of milk without sugar. This result, though familiar to the chemist, is curious to the reader who may not be familiar with the fact that a given measure of two substances may be combined and then occupy only the space previously occupied by one.

But to return to the process of manufacturing. The sugar is emptied from the barrels into reservoirs, and boiling milk poured upon it till all dissolved, and then it is again strained, making the third time here, and fourth one, counting the straining on the farm. The sugar-ed milk is then drawn up into the vacuum pans, and the process completed as described. The cans of this milk, when cooled, are taken from the ice-bath to the packing room, and emptied into others set upon stands and provided with stop-cocks, like those called molasses gates, through which the milk, which is of the consistence of thick molasses, is drawn into tin cans which hold exactly one pound each. When filled, their covers, which have about two inches diameter, are put in place, and three drops of solder melted upon the joint and around the edge. This work has generated heat enough to expel the slight amount of air under the lid, through a small hole in its centre, which is now closed by a little drop of solder.—*Med. & Surg. Reporter.*

ANY physician who has had an obstinate case of ozæna to treat will appreciate, we think, Dr. Warren's ingenious inhaler, described in this week's JOURNAL and figured on the cover. If its use accomplishes all that it promises, it will supply a desideratum which has long been urgently felt, and will lay both the profession and the community under lasting obligations to the inventor.

VITAL STATISTICS OF BOSTON.

FOR THE WEEK ENDING SATURDAY, DECEMBER 31st, 1864.

DEATHS.

| | Males. | Females. | Total. |
|---|--------|----------|--------|
| Deaths during the week | 42 | 52 | 94 |
| Ave. mortality of corresponding weeks for ten years, 1853—1863, | 42.2 | 41.7 | 83.9 |
| Average corrected to increased population | 00 | 00 | 91.88 |
| Death of persons above 90 | 0 | 0 | 0 |

DEATHS IN BOSTON for the week ending Saturday noon, Dec. 31st, 94. Males, 42—Females, 52.—Abscess, 1—accident, 4—disease of the bowels, 1—inflammation of the bowels, 3—congestion of the brain, 1—disease of the brain, 4—bronchitis, 3—cholera infantum, 2—consumption, 22—convulsions, 4—croup, 4—diphtheria, 2—dropsy, 2—dropsy of the brain, 1—erysipelas, 1—scarlet fever, 4—disease of the heart, 2—insanity, 1—lithiasis, 1—inflammation of the lungs, 8—marasmus, 1—measles, 1—old age, 3—puerperal disease, 1—rheumatism, 1—scalded, 1—scrofula, 1—smallpox, 4—suicide, 1—syphilis, 1—tracheitis, 1—unknown, 7.

Under 5 years of age, 33—between 5 and 20 years, 8—between 20 and 40 years, 27—between 40 and 60 years, 9—above 60 years, 17. Born in the United States, 58—Ireland, 28—other places, 7.